

Traditional Medicinal Plants Used For Treatment of Dandruff in Ethiopia: A Review Article

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ABSTRACT

Background: Dandruff is a common scalp disorder affecting almost half of the pubertal population of any ethnicity in both the genders, but more prevalent in the male population between the age group of 20-60 year. Still there is no review has been done systematically on traditional medicinal plants used to treat dandruff. This review was aimed to provide an overview of traditional medicinal plants used to treat dandruff.

Literature Review: During reviewing different databases were used such as Google Scholar, Research Gate and PubMed were searched for published studies on traditional medicinal plants used to treat dandruff in Ethiopia without restriction in the year of publication or methodology. During searching terms were used like "dandruff", "traditional medicinal plants" and "Ethiopia". Most papers not figure out medicinal plants used in treatment of dandruff were rejected and excluded.

Results: The searching were produced a total of 150 papers. But, Small papers were suitable for review by included medicinal plants used to treat dandruff and other was not. Based on this a total of thirty nine traditional medicinal plants were reviewed used to treat dandruff. Leaves (56.4%) were the most cited mode of preparation followed by roots (10.26%). In the habit, herbs (41.02%) were mostly cited. Preparations of the remedies were by crushing, pounding and rubbing of fresh materials. The prepared remedy was applied dermal.

Conclusion: In the present review, a total of thirty nine traditional medicinal plants have been identified and recorded for their use in treatment of dandruff in Ethiopia. Herbs and tree found majority of the plants while the commonly used plant part was leaf. Therefore, these medicinal plants are required further study and extraction in detail to treat dandruff in the future.

Key words: Dandruff; Traditional medicinal plants; Ethiopia; Treatment; Extraction

Introduction

According to cotton, plants are fundamental to almost all life on the earth, providing protection and nourishment for organisms ranging from bacteria to large mammals [1]. In Ethiopia, plants have been used as a source of traditional medicine from antiquity to solve different health problems and human sufferings such as stomach ache, headache, rabies, snake bite, dandruff, etc. [2]. Medicinal plants have been considered as a core part in traditional system of medicine [3]. About 80% of the Ethiopian population and 90% of livestock still depend on traditional medications to fight a number of diseases [4]. Dandruff is a skin condition that mainly affects the scalp. Symptoms include flaking and sometimes mild itchiness. It can result in social or self-esteem problems [5]. Dandruff affects about half of adults, males more often affected than females. Onset is usually at puberty; with rates decreasing after the age of 50. Dandruff mechanism is thought to be the result of the activity of enzyme called lipase [6]. The *Malassezia* fungus which causes dandruff that uses this enzyme to break down sebum to oleic acid (pro-inflammatory free fatty acids) [6]. Research showed that during dandruff, the levels of *Malassezia* increase by 1.5 to 2 times its normal level [7] and Oleic acid penetrates the top layer of the epidermis, the stratum corneum, and evokes an inflammatory response in susceptible people which disturbs homeostasis and results in erratic cleavage of stratum corneum cells [8]. Also, According

to, this fatty acid penetrates into the top layer of the scalp and causes inflammation and increased skin cell flaking, in susceptible people [3]. Red and greasy patches of skin and a tingly feeling on the skin are also symptoms. Also, dandruff is common in some parts of Ethiopia and can be easily treated by medicinal plants. This investigation was done in different parts of Ethiopia in the entitled of “Ethnobotanical study of traditional medicinal plants in different district of Ethiopia”. Although different studies have been conducted on traditional medicinal plants used to treat various human diseases in different parts of Ethiopia, there has not been any review done that widely articulates the traditional medicinal plants used to treat dandruff. Therefore, there is a need to assess the overall traditional preparation techniques and types of plants used in the country. The objective of this review was to provide an overview of traditional medicinal plants used to treat dandruff in Ethiopia. This review gives a gateway for extraction of vital medicine to treat dandruff.

Literature Review

Previously published data in journals, textbooks, periodicals, websites and databases information written in pharmacological profile and traditional uses of Ethiopia medicinal plants to treat dandruff was checked for collecting information. These articles are published in different journals by searching on the website in the title of “Ethnobotanical study of traditional medicinal plants in different district of Ethiopia” then download. After that, each article is searching line by line that treat dandruff. During reviewing small papers have been reviewed by included scientific, family, plant habit, part utilized and mode of preparation of medicinal plants for treating dandruff without the restriction of years.

Results and Discussion

Composition and Growth form of Medicinal Plants

A total of 39 medicinal plant species with 25 families was reviewed, used to treat dandruff. The most cited families were *Polygonaceae* followed by *Solanaceae*. These families are the most effective to treat dandruff and also used as other ailments, according to different authors [4,9-28] (Table 1).

Plant Parts Used For the Preparation of Traditional Medicines to Treat Dandruff

The study showed that the most plant parts used to treat dandruff were leaf 22 (56.4%) followed by root 4 (10.26%) (Figure 1). In this case, the leaf is easily accessible to use and treat dandruff. Most of the authors agree that the leaves were the most prominent parts treat different disease due to the production of secondary metabolites is emitted from them [19,24,26,27,29]. Also other communities used different parts of plants to treat dandruff such as stem, bark, seed, latex, twig, bulb etc. (Figure 1).

Growth Form of Medicinal Plants

The growth forms of plants were dominated by herb 16 (41.02%), followed by tree 14 (35.89%) (Figure 2). Similar research agreed that herbs were the most dominant habit [22,29,18]. The highest proportion of growth habit was covered with herbs than trees; because tree takes much time and effort to harvest, but herbs are available easily in and around the compound and most of them are seasonal. [16-18,21,23,25,26,30].

Condition, Mode of Preparation and Application

The condition of medicinal plant's preparation was fresh followed by dryness. In most researchers agree that crushed of fresh forms could be better at any place using stones most. In addition, this could be most of the community members believed medicinal plant parts that crushed and immersed in water lead to extraction of active chemical substance easy and give immediate response to their health problems [9-13,18,22,27,29-31]. It is known that there are different modes of preparation in different study areas to prepare medicinal plants to treat dandruff. Although the preparation modes vary from area to area to treat particular disease in general in this review most common one is crushing followed by pounding. Mode of application was dermal.

Commonly medicinal plants used for Treating Dandruff in Ethiopia with photograph

In this review the most common medicinal plants to treat dandruff was *Ziziphus spinachristi* L, *Desf.* followed, *Zehneria scabra* Sond, *Datura stramonium* L, *Euphorbia heterophylla* L, etc. these are based on a number of medicinal plants cited in each article (Figure 3).

Table 1: Medicinal plants used in the treatment of dandruff with their scientific name, family, plant habit, part utilized and mode of preparation and application.

Scientific Name	Family Name	Plant Habit	Part Utilized	Mode of preparation and application	References
<i>Crotalaria pycnostachya</i>	Solanaceae	Herb	Whole parts	Crushing the parts, add small amount of water and take the juice and mix with butter and cover the wound part	[14]
<i>Datura stramonium</i> L.	Solanaceae	Herb	Fruit	Fruit of <i>Datura stramonium</i> is dried and powdered, mixed with water and used to wash the head skin.	[15]
<i>Ricinus communis</i> L.	Polygonaceae	Herb	Stem	Pounding and cover the hair and skin part of the head with it.	[14]
<i>Rumexabyssinicus</i> Jacq	Polygonaceae	Tree	Leaf	Crush and rub it on the affected part.	[16]
<i>Ziziphus spinachristi</i> (L.) Desf.	Rhamnaceae	Tree	Leaf	The fresh part of the leaf will be rubbed on the affected area. Or Pound and cream.	[10,17,18]
<i>Thespesia populnea</i> L.	Malvaceae	Tree	Bark	Wash the head by the internal part of the bark.	[14,19]
<i>Croton macrostachyus</i> Hochst. Ex.Delile	Euphorbiaceae	Tree	Leaf/twig	The fresh bud is cut and the fluid applied to the rash. If the problem is on the head, the head is shaved and bud fluid applied.	[20]
<i>Malva verticillata</i> L.	Malvaceae	Herb	Leaf	Crushed and water soaked root is applied as a hair wash	[9,21]
<i>Laggera crispata</i> (Vahl) Hepper & J.R.I. Wood	Asteraceae	Herb	Leaf	Leaf rubbed and applied to the scalp	[21]
<i>Acacia origena</i>	Fabaceae	Tree	Leaf	Some leaves were crushed and placed on the shaved head once every day for 3 consecutive days	[22]
<i>Zehneria scabra</i> Sond.	Cucurbitaceae	Climber	Leaf	Crush leaves and seed of this plant mix with butter, then apply the paste to the affected area (head).	[21-23]
<i>Vernonia amygdalina</i> Del.	Asteraceae	Shrub	Stem	The stem is harvested and the latex is painted on the head.	[24]
<i>Juniperus procera</i> Hochst ex. Engl.	Cupressaceae	Tree	Leaf	Some leaves were crushed and placed on a shaved head every day for 5 consecutive days.	[10]
<i>Grewia ferruginea</i> Hochst. ex A. Rich.	Tiliaceae	Shrub	Bark	The hair washed by fresh or dried leaves of <i>Grewia ferruginea</i> and used as soap	[18]
<i>Calpurnia aurea</i> (Ait.) Benth.	Fabaceae	Tree	Leaf	Some leaves were crushed and placed on a shaved head once in the interval of two days for 3 consecutive times.	[10]
<i>Rumex nervosus</i> Vahl	Polygonaceae	Tree	Leaf	Some leaves were crushed and placed on the shaved head for 5 consecutive days by replacing new every day.	[10]
<i>Linum usitatissimum</i> L.	Linaceae	Herb	Seed	The hair washed by seeds of <i>Linum usitatissimum</i> and used as soap	[11,25]
<i>Sida cuneifolia</i> Roxb.	Malvaceae	Shrub	Leaf	Crushed and washing with its decoction.	[12]
<i>Melia azedarach</i> L.	Meliaceae	Tree	Leaf	Crush and cream on affected area.	[18]
<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	Herb	Sap/ Latex	The fresh latex of <i>Euphorbia platyphyllos</i> has extracted its content and creamed affected part.	[26,13]
<i>Persea americana</i> Mill. T	Lauraceae	Tree	Fruit	Grinding the fruit and applied to the affected area.	[13]
<i>Vernonia amygdalina</i> Del.	Asteraceae	Shrub	Leaf	Pound and Cream.	[18]
<i>Eragrostis abyssinnica</i>	Poaceae	Herb	Seed	The seed is ground and dough is prepared then creamed on bare head.	[18]
<i>Zea mays</i> L	Poaceae	Herb	Leaf	Burn and cream ashes with butter.	[18]
<i>Cordia Africana</i> L	Boraginaceae	Tree	Leaf	The leaf of <i>Cordia africana</i> is roasted, powdered and mixed with butter and creamed affected part until recovery	[23]
<i>Chenopodium ambrosioides</i> L.	Chenopodiaceae	Herb	Leaf	Its leaf is pounded, squeezed and creamed the infected parts	[15,23]
<i>Xanthium strumarium</i> L.	Asteraceae	Herb	Leaf	Rub, squeeze, then cream	[18]
<i>Datura stramonium</i> L.	Solanaceae	Herb	Leaf	The fresh leaf of <i>Datura stramonium</i> is squeezed and creamed affected part until recovery	[23]
<i>Hordeum vulgare</i> L.	Poaceae	Herb	Seed	The seven seed of <i>Hordeum vulgare</i> is crushed and then creamed affected part.	[23]
<i>Myrtus communis</i>	Myrtaceae	Shrub	Leaf	The leaf of <i>Myrtus communis</i> is powdered, mixed with butter and creamed on affected part.	[23,27]
<i>Justicia schimperiana</i>	Acanthaceae	Shrub	Leaf	The leaf <i>Justicia schimperiana</i> is pounded and squeezed then applied.	[23]
<i>Allium Sativum</i> L.	Alliaceae	Herb	Bulb	After peeling the <i>Allium sativum</i> rubbed its bark.	[9]
<i>Impatiens tinctoria</i> A. Rich.	Balsaminaceae	Herb	Root	The root of <i>Impatiens tinctoria</i> pounded and mix with butter, then creamed on affected part.	[9]
<i>Balanites aegyptiaca</i> (L.) Del	Balanitaceae	Tree	Leaf	Crush the concoction, then paint	[9]

<i>Buddleja polystachya</i> Fresen.	Loganiaceae	Shrub	Leaf	Fresh leaf is crushed and given topical application	[28]
<i>Euclea racemosa</i> Murr	Ebenaceae	Shrub	Root	Paint the ash together with butter	[9]
<i>Olea europaea</i> subsp. <i>cuspidata</i> L	Oleaceae	Tree	Root	Crush and paint the concoction/crush and paint alone	[9]
<i>Rumex nepalensis</i> Spreng	Polygonaceae	Herb	Root	Crush then wash with it	[9]
<i>Hagenia abyssinica</i> (Bruce) J.F.Gmelin	Rosaceae	Tree	Leaf	Crush and paint	[9]

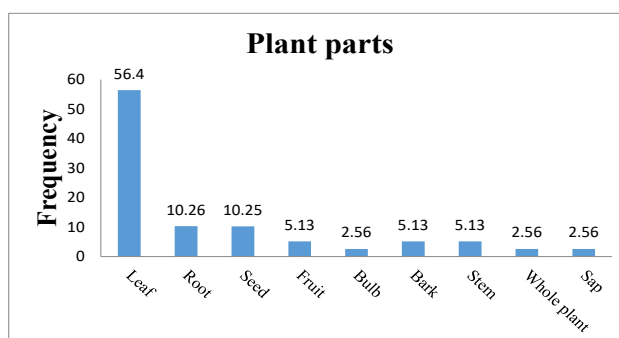


Figure 1: Plant parts used to preparation of remedy to treat dandruff.

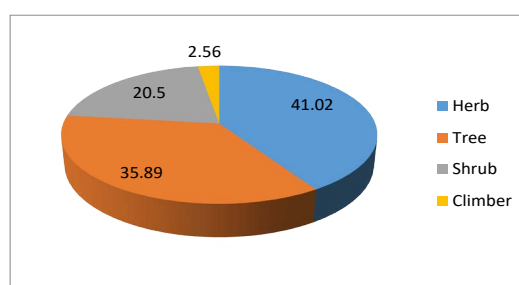


Figure 2: Growth form of medicinal plants.



Figure 3: Some common medicinal plants in Ethiopia used for dandruff and other ailments.

(Source: Natural Database for Africa (NDA) On CD-ROM Version 2.0, August 2011)

Conclusion

In the present review, a total of thirty nine traditional medicinal plants have been identified and recorded for their use in treatment of dandruff in Ethiopia. Herbs and tree found majority of the plants while the commonly used plant part was leaf. Therefore, these medicinal plants are required further study and extraction in detail to treat dandruff in the future.

Declarations

Availability of Data and Material

No additional data are required; all information is clearly stated in the main manuscript.

Competing Interest

The authors declare no competing interest.

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